

**TABLE 13-2  
BUILDING ENVELOPE REQUIREMENTS FOR CLIMATE ZONE 2**

**Minimum Insulation R-Values or Maximum Component U-Factors for Zone 2**

**Building Components**

Space Heat Type	Components					
	Roofs Over Attic <sup>3</sup>	All Other Roofs <sup>3</sup>	Opaque Walls <sup>1,2</sup>	Opaque Doors	Floor Over Uncond Space	Slab On Grade <sup>5</sup>
1. Electric resistance heat**	R-38 or U=0.031	R-30 or U=0.034	R-24 or U=0.044	U=0.60	R-30 or U=0.029	R-10 or F=0.54
2. All others including heat pumps and VAV	R-38 or U=0.031	R-25 or U=0.039	(a) Metal framing: R-13 cavity insul. + R-3.8 continuous insul. or U=0.084;  (b) Wood framing & framing other than metal: R-19 or U=0.062	U=0.60	R-21 or U=0.047	R-10 or F=0.54

\*\* Compliance with nominal prescriptive r-values requires wood framing

**Maximum Glazing Areas and U-Factors and  
Maximum Glazing Solar Heat Gain Coefficients for Zone 2**

**Glazing**

Maximum Glazing Area as % of Wall	0% to 30%			>30% to 45%		
	Maximum U-Factor		Max SHGC <sup>4</sup>	Maximum U-Factor		Max SHGC <sup>4</sup>
	VG	OG		VG	OG	
1. Electric resistance heat	0.40	0.60	0.40	Prescriptive Path Not Allowed		
2. All others including heat pumps and VAV	0.55	0.70	0.45	0.45	0.60	0.40

**Footnotes**

**1. Below Grade Walls:**

When complying by the prescriptive approach, Section 1322:

- walls insulated on the interior shall use opaque wall values,
- walls insulated on the exterior shall use a minimum of R-12 insulation,
- walls shall be insulated for the first 10 feet below grade. (There shall be no credit for insulating those portions of below grade walls and footings that are more than 10 feet below grade, and those portions below 10 feet shall not be included in the gross exterior wall area.)

When complying by the component performance approach, Section 1331:

- walls insulated on the interior shall use the opaque wall values when determining  $U_{bgwt}$ ,
- walls insulated on the exterior shall use a target U-factor of  $U=0.061$  for  $U_{bgwt}$ ,
- the calculations shall include the first 10 feet of walls below grade. (Those portions of below grade walls and footings that are more than 10 feet below grade shall not be included in the gross exterior wall area and shall not be included when determining  $A_{bgwt}$  and  $A_{bgw}$ .)

- Concrete and Masonry Walls:** If the area weighted heat capacity of the total opaque above grade wall is a minimum of  $9.0 \text{ Btu/ft}^2 \cdot ^\circ\text{F}$ , then the U-factor may be increased to 0.123 maximum, or minimum additional R-7.6 continuous insulation uninterrupted by framing.  
--Individual walls with heat capacities less than  $9.0 \text{ Btu/ft}^2 \cdot ^\circ\text{F}$  and below grade walls shall meet opaque wall requirements listed above.  
--Glazing shall comply with the glazing requirements listed above.
- Roof Types:** A roof over attic is where the roof structure has at least 30 inches clear distance from the top of the bottom chord of a truss or ceiling joist to the underside of the sheathing at the roof ridge, and the ceiling is attached to the ceiling joist or the bottom of the truss or ceiling joist. Anything else is considered all other roofs.
- SHGC (Solar Heat Gain Coefficient per Section 1312.2):** May substitute Maximum Shading Coefficient (SC) for SHGC (See Chapter 2 for definition of Shading Coefficient).
- Radiant Floors:** Where insulation is required under the entire slab, radiant floors shall use a minimum of R-10 insulation or  $F=0.55$  maximum. Where insulation is not required under the entire slab, radiant floors shall use R-10 perimeter insulation according to Section 1311.6 or  $F=0.78$  maximum.